Chapter 2

Alternatives Considered

2.0 ALTERNATIVES CONSIDERED

This Antelope Valley Draft Environmental Impact Statement (DEIS) is addressing stormwater management, transportation and community revitalization issues in the study area. Plans of the Amended Draft Single Package are provided in Appendix I.[1]

The National Environmental Policy Act (NEPA) requires that all reasonable alternative ways to address purposes and needs are explored and evaluated in a DEIS. Reasonable alternatives are those that are practical or feasible from a technical and economic standpoint, while best addressing the established purposes and needs. In addition, any alternatives eliminated from further study and the reasons for their elimination must be identified.

The Partners bring a long history individually, and often together, of trying to improve the community they share. For example, in July 1988, the City of Lincoln (representing, in part, interests of the Malone Community) and the University of Nebraska – Lincoln (UNL) entered into an Interlocal Agreement. They established a new boundary line between campus and community – Trago Park was built as a result of land trades between the City and UNL to benefit the community and the UNL City Campus just east of that line.

Several years later the three Partners did some internal planning and strategizing on broadening their cooperative efforts. Together they looked at the feasibility of some roadway and stormwater control improvements that might further address their representative needs. Having determined for themselves that there was some feasibility of addressing these needs in the area, they agreed that two cooperatively managed studies would be appropriate:

- the US Army Corps of Engineers would analyze the Antelope Creek basin for improvements that might meet the local and federal needs of limiting the effects of a 100-year flood in the area, and
- a Major Investment Study based on the Intermodal Surface Transportation Efficiency Act (ISTEA) and Clean Air Act Amendments (CAAA) requirements for better transportation planning.

Along with appropriate Federal and State agencies, the Partners and appropriate federal agencies selected Major Investment Study (MIS) Option I for development of the NEPA documentation during preliminary engineering after completion of the MIS report (*a.k.a. Antelope Valley Phase III Summary Report*) and adoption of the Amended Draft Single Package.

In essence the inclusion of the results of the MIS in the *Lincoln-Lancaster County Comprehensive Plan* establishes a locally preferred major investment strategy (or alternative) for thorough analysis in the NEPA process, along with the No-Action Alternative. This EIS is the disclosure document, along with the other Antelope Valley

[1] Technical reports, which are identified in this EIS, are all incorporated by reference in this EIS. Appendix A provides a complete list of referenced reports. Copies of this EIS and the Antelope Valley Study Team reports are available for public viewing from the City of Lincoln-Lancaster County Planning Department, Suite 213, 555 South 10th Street, Lincoln, Nebraska, 68508. Copies of this EIS and Study Team reports are also available for viewing at city public libraries and available for purchase at Kinko's Copies, 1201 Q Street, Lincoln, Nebraska, 68508.

study reports that are incorporated by reference, that gives area residents, business people, agency staff, and elected officials and decision makers information they can use to evaluate the alternatives and determine future actions, if any.

This chapter addresses a full range of alternatives that have been studied and evaluated in the Major Investment Study (MIS) which concluded in December 1998. Subsequent work amended the Draft Single Package. Alternatives deemed not reasonable and practical by an extensive public involvement process are also reported.

The chapter summarizes the two-year process to develop concepts to help solve (rather than just address) the purposes and needs, and the process of screening and evaluation. It also describes the Draft Single Package, amends the Draft Single Package, and addresses the No-Action Alternative. Figure 2.1 summarizes the alternative developments, screening, and refining process utilized in the Antelope Valley Study. Phases I and II of the study included the identification of purposes and needs (see Chapter 1.0), and development of concepts to address the purposes and needs. During Phase III of the study, the various concepts were combined into "packages" for more analyses and evaluation. The AV MIS concluded with the identification of the Draft Single Package as the preferred alternative at the end of Phase III. Study phases I, II, and III included the MIS development of alternatives and screening of them and were conducted with early and fully proactive public involvement opportunities. There was responsible consideration of the environmental assessments of the likely impacts of the alternatives, and analysis of a full range of alternatives to test for reasonableness.

Subsequently, Phase IV of the Antelope Valley Study included more evaluation and consequent amendments to the Draft Single Package and, ultimately, the preparation of this EIS.

2.1 History and Screening of Options

2.1.1 Concept Development

During 1997, over 100 options were developed to address the purposes and needs described in Chapter 1. The options included over 50 stormwater management concepts, about 25 transportation concepts, and over 30 community revitalization ideas. Each concept was described and presented to the Advisory Committee for their consideration. For each concept, the relative merits were reviewed, as well as the ability of the concept to address the purposes and needs. The "reasonableness" of each concept as defined under NEPA was at the heart of the relative merit evaluation.

Figures 2.2, 2.3, and 2.4 show stormwater management, transportation, and community revitalization concepts that were analyzed in the spring of 1997. Each concept was analyzed to determine how it meets each of the purposes and needs described in Chapter 1. Specific screening evaluation measures applied to stormwater management, transportation, and community revitalization concepts are presented in Table 2.1. This information supplemented the analysis regarding how well each concept did (or did not) address the purposes and needs identified by the community.

Figure 2.1

Figure 2.2

Figure 2.3

Figure 2.4

Table 2.1
SCREENING EVALUATION MEASURES

Stormwater Management	Transportation	Community Revitalization
Handle 100-year flood volume	Reduce traffic congestion	Supports development and redevelopment
Provide affordable solution	Improve pedestrian safety	Efficient land use patterns
Cost-effective solution	Reduce rail conflicts	Creates development opportunities
Cultural resource impacts	Improve traffic operations	Land for new community projects
Natural resources impact	Less neighborhood through traffic	Land for new business projects
Existing infrastructure impact	Affordable solution	Benefit minority/elderly/ low income
Community revitalization potential	Cost-effective solution	Community cohesiveness
Flood impact	Community acceptance	Minimum neighborhood disruption
Community acceptance		Community acceptance

2.1.2 Screening

The 100+ concepts were subjected to a screening analysis, including consideration of environmental issues, such as those documented in the *Environmental Assessment Status Report* (April 1997). Avoidance of adverse environmental impacts was a key determinant during concept development, as well as during the screening process.

The evaluation sheets and resulting community dialog eliminated several options from further consideration. For example, in transportation, the roadway on the south side of the Burlington Northern Santa Fe (BNSF) Railroad was eliminated because of potentially adverse acquisition, noise, visual, and other neighborhood impacts. Similarly, the concept of an elevated roadway above the mainline railroad was eliminated because it was expected to be prohibitively expensive, and disruptive to railroad operations both short-term and long-term without any benefit over the alignment north of the railroad along State Fair Park Drive.

In community revitalization, for example, the concept of relocating Salt Creek was eliminated because of potential displacement of the small residential community between Salt and Oak Creeks and an automobile salvage yard that could contain hazardous materials. There are no sewer facilities on the island; a fact which would complicate or add to the expense of redevelopment concepts. Large, single-establishment retail development was eliminated as a concept because initial investigations of space requirements indicate that land assembly near downtown Lincoln would require excessive relocation of existing residents or businesses and it was felt these large buildings would be inappropriate land uses near downtown.

Also, although they have not been eliminated, there are several Community Revitalization concepts that are difficult to depict on the maps. For example, job

training may be included as a program or activity in a "wrap-around" concept, although it is not specifically illustrated on the maps of any of the packages.

Table 2.2 shows concepts that were eliminated from further study (in gray), and concepts meriting further study. The latter concepts were considered as elements of "packages" of alternatives, which are described in Section 2.1.4. The dots on Table 2.2 are intended to reflect the transportation and stormwater management "lines" depicted on the sketch maps. Concepts without any dots that are not shaded continued to be considered at that time. They would be alternates to parallel alignments. In most cases, the stormwater conveyance concepts would be either a conduit or an open channel.

2.1.3 Other Alternatives Considered and Discarded

Public Transportation. During the course of meetings for the AV MIS, improvements to public transportation were suggested for further study. Suggestions included improving the coordination among elderly and handicapped services, improving bus operations, and implementing rail transit service. StarTran, the City's transit operator, has an Advisory Board that investigates opportunities related to public transport. This Board has the responsibility to consider bus system service improvements -- for which there would be opportunities as the Draft Single Package roadways are constructed. In addition, a public advocacy group, the Citizen's Transportation Coalition (CTC), has raised several issues related to public transportation. The AV MIS coordinated with the CTC and the Advisory Board. Chapter 5 of this DEIS documents any potential impacts of the Antelope Valley improvements on the existing StarTran service.

The potential for successful rail transit is related to the cost of service, the potential market that would be served and potential impacts. Lincoln, with a population just over 200,000, is a smaller community than any US city that has rail transit, or is even considering rail transit. In order to begin studying the potential for rail transit, the Federal Transit Administration suggests that a community demonstrate daily transit ridership of about 15,000 in a single corridor. StarTran's annual ridership is 1.57 million for the whole system. This is less than 6,000 per day, or about 40 percent of the "benchmark" used for consideration of light rail transit in a given corridor.

At a typical average construction cost of $12 to $16 million per kilometer ($20 to $25 million per mile) in an urban environment, almost no likelihood of federal funding under current conditions, expected modest ridership, and the inability to address the purpose and need, the AV MIS did not consider light rail transit as a transportation option. Nothing in the Draft Single Package is likely to hinder future rail transit development, should conditions change quite dramatically regarding feasibility.

2.1.4 Alternative Package Development

The most feasible and publicly acceptable options from the list of over 100 possible actions in stormwater management, transportation, and community revitalization were combined in summer and fall 1997 into four "packages" of alternatives. Each package was comprised of compatible stormwater management, transportation, and community revitalization elements. These packages (A, B, C, and D) allowed for a more thorough analyses, such as costs and travel benefits, on a smaller, more focused set of actions.

Table 2.2
CONCEPT SCREENING AND PACKAGE DEVELOPMENT

	Packages:	A	B	C	D
Stormwater Management Concepts					
SM-D-1.1	Pansing Park Detention Cell				
SM-D-2.1	Eden Park Area Detention				
SM-B-1	38th Street Bridge Improvement	●	●	●	●
SM-B-2	South Street Bridge Improvement	●	●	●	●
SM-D-3.1	Antelope Park West Detention	●	●	●	
SM-D-4.1	Antelope Park East Detention	●	●	●	
SM-D-5.1	Neighbors Park Area Detention				
SM-D-6.1	Randolph Street Vicinity Detention (Smaller Cell Configuration)	●	●	●	
SM-D-6.2	Randolph Street Vicinity Detention (Medium Cell Configuration)	●	●	●	
SM-D-6.3	Randolph Street Vicinity Detention (Maximum Cell Configuration)	●	●	●	
SM-D-7.1	Lincoln High Vicinity Detention	●	●	●	
SM-D-8.1	Antelope Park Vicinity Detention (Smaller Cell Configuration)	●	●		
SM-D-8.2	Antelope Park Vicinity Detention (Maximum Cell Configuration)				
SM-D-9.1	Trago Park Vicinity Detention	●	●		
SM-CH/BR-1.1	Antelope Creek to 21st Street Channel/Bridges				
SM-CDT-1.1	Antelope Creek to 21st Street Conduit				
SM-CH/BR-2.1	N to O Street Channel & Bridges				
SM-CH/BR-2.2	N to O Street Channel & Bridges			●	●
SM-CH/BR-2.3	N to O Street Channel & Bridges				
SM-CDT-2.1	N to O Street Conduit				
SM-CDT-2.2	N to O Street Conduit				
SM-CDT-2.3	N to O Street Conduit				
SM-CH/BR-3.1	O to S Street Channel/ Bridges			●	●
SM-CH/BR-3.2	O to S Street Channel/ Bridges				
SM-CH/BR-3.3	O to S Street Channel/ Bridges				
SM-CH/BR-3.4	O to S Street Channel/ Bridges				
SM-CDT-3.1	O to S Street Conduit				
SM-CDT-3.2	O to S Street Conduit				
SM-CDT-3.3	O to S Street Conduit				
SM-CDT-3.4	O to S Street Conduit				
SM-CH/BR-4.1	S Street to North of Vine Street Channel/Bridges			●	●
SM-CH/BR-4.2	S Street to North of Vine Street Channel/Bridges				
SM-CDT-4.1	S Street to North of Vine Street Conduit				
SM-CDT-4.2	S Street to North of Vine Street Conduit				
SM-CH/BR-5.1	North of Vine Street to Y Street Channel/Bridges				
SM-CH/BR-5.2	North of Vine Street to Y Street Channel/Bridges	●	●	●	●
SM-CH/BR-5.3	North of Vine Street to Y Street Channel/Bridges				
SM-CDT-5.1	North of Vine Street to Y Street Conduit				
SM-CDT-5.2	North of Vine Street to Y Street Conduit				
SM-CDT-5.3	North of Vine Street to Y Street Conduit				
SM-CH/BR-6.1	Y Street to BNSF Channel/Bridges				
SM-CH/BR-6.2	Y Street to BNSF Channel/Bridges	●	●	●	●
SM-CH/BR-6.3	Y Street to BNSF Channel/Bridges				
SM-CDT-6.1	Y Street to BNSF Conduit				
SM-CDT-6.2	Y Street to BNSF Conduit				

	Packages:	A	B	C	D
SM-CDT-6.3	Y Street to BNSF Conduit				
SM-CH/BR-7.1	BNSF RR to Salt Creek Channel/Bridges				
SM-CH/BR-7.2	BNSF RR to Salt Creek Channel/Bridges	●	●	●	●
SM-CH/BR-7.3	BNSF RR to Salt Creek Channel/Bridges				
SM-CDT-7.1	BNSF RR to Salt Creek Conduit				
SM-CDT-7.2	BNSF RR to Salt Creek Conduit				
SM-CDT-7.3	BNSF RR to Salt Creek Conduit				
Transportation Concepts					
14-A	14th Street- Existing Alignment, Two-way Roadway	●	●	●	●
18-A	18th Street- New Alignment, Two-way Roadway				
18-B	18th Street- New Alignment, Two-way Roadway				
20-A	20th Street- New Alignment, Two-way Roadway				
NE-A	North Dead Man's Run- New Alignment, Two-way Roadway				
NE-B	31st Street- New Alignment, Two-way Roadway		●	●	●
33-A	33rd Street- Existing Alignment, Two-way Roadway	●			
33-B	33rd Street West- New Alignment, Two-way Roadway				
AD-A	Adams Street North- New Alignment, Two-way Roadway		●	●	
AD-B	Adams Street South- New Alignment, Two-way Roadway	●			
16/17-A	16th and 17th Street- Existing Alignments, One-way Pairs				
19-A	19th Street- Existing Alignments, Two-way Roadway or part of a new one-way pair			●	●
19-B	19th Street/Capitol Parkway- New Alignment, Two-way Roadway				
17/19-A	17th/19th Streets- New Alignment/Connection between Concept 16/17-A, 17-B, and 19-A, One or Two-way Roadway				
17/21-A	17th/21st Streets- New Alignment/Connection between Concept 16/17-A, 17-B, and 21-A, One or Two-way Roadway				
21-A	21st Street- Existing Alignment, Two-way Roadway or part of a one-way pair	●	●		
CP-A	Capitol Parkway- New Alignment South and West of Lincoln High, Two-way Roadway	●	●		
CP-B	Capitol Parkway- New Alignment South and West of Lincoln High, Two-way Roadway				
NS-A	State Fair Park Drive- Existing Alignment, Two-way Roadway	●			
NS-B	State Fair Park Drive- Existing Alignment, Two-way Roadway		●	●	●
SS-A	South Side of BNSF Mainline Railroad Tracks- New Alignment, Two-way Roadway				
RR-A	BNSF Mainline Railroad Tracks- New Alignment, Two-way Roadway				
MIL-A	Military Road- Existing Alignment, Two-way Roadway	●	●	●	●
HO-A	Holdrege Street-Existing Alignment, Two-way Roadway	●	●	●	●
Community Revitalization Concepts					
*CR-1 **	*Wrap Around Schools*				
*CR-2 **	*Wrap Around Churches*				
CR-3	Wrap Around Community Centers	●	●	●	●
CR-4	New Community Centers	●	●	●	●
CR-5	Lincoln High/Elliott Campus	●	●		
*CR-6 **	*Stand Alone Health Care Facility*				
*CR-7 **	*Police Substations*				
CR-8	Public Recreational Expansion	●	●	●	●

	Packages:	A	B	C	D
CR-9	New Community Park(s)	●	●	●	●
CR-10	New Neighborhood Parks	●	●	●	●
CR-11	Trail Expansion	●	●	●	●
CR-12	UN-L Recreation	●	●	●	●
*CR-13 **	*Affordable Housing*				
CR-14	Student Housing				
CR-15	New Downtown Housing Development		●	●	●
*CR-16 **	*Convenience Retail*				
CR-17	Downtown Supermarket	●	●	●	●
CR-18	Large single-establishment Retail Development				
CR-19	Mixed Use Development (Residential and Commercial)		●	●	●
CR-20	Employment Centers	●	●	●	●
*CR-21 **	*Exhibition/ Convention Center/ Hotel*				
*CR-22 **	*Reinforce Autoland*				
CR-23	UNL Structured Parking	●	●	●	●
*CR-24 **	*UNL Athletic Facilities*				
CR-25	Relocated UNL Service Center	●	●	●	●
CR-26	New Use of Whittier Junior High School	●	●	●	●
CR-27	Relocation of Military Area	●	●	●	●
*CR-28 **	*Relocation or Reconfiguration of State Fair*				
CR-29	Relocation of Salt Creek				
CR-30	Improve Transition Between Land Uses	●	●	●	●
*CR-31 **	*Regulatory Mechanisms*				
*CR-32 **	*Closer to Home Strategies*				
*CR-33 **	*Coordinated Public Transportation*				
*CR-34 **	*Job Creation/Training*				
*CR-35 **	*Partnering Strategies*				

Key: Shaded items were eliminated from further consideration in the AV MIS

*CR- * Items in italics indicate they are still being considered & pursued. However, AV study efforts continue to focus on CR concepts including "land assembly" issues closely related to TR and SM concepts.*

The four packages were very different from each other to illustrate a range of ways to solve the purposes and needs. Figures illustrating these packages are contained in a separate technical report entitled *Phase III Summary Report: Draft Single Package*.

Each package initially focused on stormwater, with transportation and community revitalization plans contingent upon the stormwater improvements. The four alternative packages included a number of elements in common:

- **Stormwater:** The 100-year floodplain would be eliminated through stormwater detention, conveyance, or some combination of the two, thereby making more land available for redevelopment. In addition, the existing conveyance channel north of Vine Street would be straightened and several bridges over the channel would be eliminated.
- **Transportation:** A new north-south arterial and new east-west connector would be provided to improve the transportation network and reduce travel times. The paths these roadways would follow differed, however, for each alternative package.

Four railroad at-grade crossings would be eliminated and neighborhood traffic would be reduced as new transportation routes would be provided around the edges of neighborhoods. The new roadways would improve downtown access, provide better access for community redevelopment, and eliminate the "uncertainty" of relationships between downtown, community, and UNL land uses.

- **Community Revitalization:** Five potential wrap-around facilities for extended and expanded community programs, Whittier Junior High School reuse and Lincoln High School and Elliot Elementary School grounds redesign would be encouraged, and new recreational, trail, and park facilities would be accommodated. Community revitalization also includes visions of a supermarket and offices downtown, an employment center along 33rd Street between Cornhusker Highway and Superior Street, and the relocation of military area for a UNL service center and new structured parking facilities.

Differences among the four packages are summarized in Table 2.3.

Table 2.3
COMPARISON OF ALTERNATIVE PACKAGES

Package Elements:	Alternative Packages			
	A	**B**	**C**	**D**
Stormwater Conveyance				
Conveyance	No	No	Yes	Yes
Roadway Flow	No	Yes	Yes	No
Detention	Yes	Yes	No	No
Transportation				
21st Street north-south arterial	Yes	Yes	Yes	No
19th Street north-south arterial	No	No	No	Yes
Military/St. Fair Park Drive east-west	To 27th	N. of RR	N. of RR	N. of RR
Community Revitalization				
Encourages housing development	No	Yes	Yes	Yes
Unifies Lincoln/Elliot School campuses	Yes	Uncertain	No	No
Encourages commercial development along 16th Street and the north-south arterial	Yes	No	No	No

Source: AV Study Team.

Package A – 100-Year Stormwater Detention. Package A would center on creating detention upstream of the conduit to temporarily store stormwater and later slowly releasing the stormwater back into the channel when the water level in the channel recedes. A combination of detention storage areas would be at three possible locations: around Lincoln High School, 27th and Randolph Streets, and Antelope Park. As in all packages, the existing channel north of Vine Street would be reconstructed parallel to the roadway in an efficient joint use corridor. Also, the reconstruction and the new roadway would remove several existing bridges that would not need to be replaced, resulting in improved channel flood capacity; the existing conduit would remain in use. The transportation and community revitalization components discussed below would coordinate with the stormwater detention approach.

The transportation component of Package A would include relocating Capitol Parkway west of Lincoln High School to permit additional detention for major stormwater

volumes. It also would include a North-South Roadway near 21st Street from the relocated Capitol Parkway to the existing 14th Street alignment, with a new crossing at 16th Street over the BNSF Railroad. This concept would include an East-West Roadway using Military Road and an alignment along the existing State Fair Park Drive to 27th Street. In the north part of the study area, this package would include improvements to 33rd Street with a new bridge over the BNSF Railroad and an intersection with Adams Street that would cross under the BNSF Railroad at approximately 30th Street and connect to the new East-West Roadway along the BNSF Railroad.

Regarding community revitalization, Package A would include five possible locations for wrap-around facilities, the possibility of the reusing historic Whittier Junior High School (now a UNL (University of Nebraska-Lincoln) facility), and redesigning Lincoln High School and the Elliott Elementary School grounds to create a contiguous campus-like setting. A number of new recreational, trail, and park facilities would be included. Commercial development would include a supermarket and office uses downtown as well as an employment center in the northern section of the study area along the 33rd Street corridor between Cornhusker Highway and Superior Street. However, the location of the new North-South Roadway in the 21st Street vicinity, together with the provision of new downtown office space, would make developing new downtown housing less likely with Package A than other packages.

Package A also would include provisions for relocating the military area from the North Bottoms neighborhood and redeveloping that site to function as a service center for UNL, and developing new structured parking facilities on the UNL City Campus.

Package B – Combined Detention and Roadway Conveyance. In Package B, stormwater would be handled by a combination of detention and conveyance. Compared to Package A, a smaller amount of detention would be accommodated at Lincoln High School, Antelope Park, and 27th and Randolph Streets. During a 100-year storm, the existing conduit capacity would convey the initial stormwater. As the stage (water elevation) in Antelope Creek increases during the storm, stormwater would continue to be conveyed by the existing conduit, and in addition, stormwater would be detained. As the stage on Antelope Creek increases further and peaks, the detention and conveyance by the existing conduit will reach a maximum (assumed to be somewhere in the 25 to 50-year storm range). The potential new North-South Roadway would then convey all stormwater in excess of the selected storm (25 to 50-year range) up to the 100-year storm. This would require a depressed roadway path with a depth of 1 to 1.5 meters (3 to 5 feet). The existing channel north of Vine Street would be reconstructed parallel to the roadway in an efficient joint use corridor. Also, the reconstruction and the new roadway would remove several existing bridges that would not be replaced, resulting in improved channel flood capacity; the existing conduit would remain in use.

The new North-South Roadway would run north from K Street along the low part of the Antelope Valley at 21st Street, and would turn northwesterly at Vine Street to a new crossing of the BNSF Railroad. After crossing a new bridge over the railroad, the new road would connect with existing 14th Street. In the east-west direction, a new roadway would extend along the north side of the BNSF Railroad mainline and connect to Holdrege Street on the west and to a new roadway on the east end that would line up

in a northeasterly direction to 33rd and Superior Streets. This package also would include a new bridge over the railroad at 33rd Street and at Adams Street.

The community revitalization components included in this package would be similar to those described for Package A, with some exceptions. Given the uncertain extent of the detention facilities for Package B, the ability to create a unified campus for Lincoln High School and Elliott Elementary School would be uncertain. Package B would provide less commercial development in the expanded downtown area between 16th Street and the new North-South Roadway, enabling the provision of new downtown housing and mixed-use development. The downtown supermarket and the employment center in the northern part of the study area, although at a different level of intensity, would be in Package B. Other community revitalization components would be similar to Package A.

Package C – Combined Conveyance and Roadway Conveyance. This package would include a medium-sized conveyance channel (or conduit in areas of constricted land availability), combined with a lowered roadway that would convey stormwater for the 25- to 100-year storm event. This package would include new conveyance from the existing entrance of the conduit at N Street along 21st Street, and would line up with the existing channel north of Vine Street that feeds into Salt Creek. The existing channel north of Vine Street would be reconstructed parallel to the roadway in an efficient joint use corridor. Also, the reconstruction and the new roadway would remove several existing bridges that would not need to be replaced, resulting in improved channel flood capacity; the existing conduit remains in use.

The new North-South Roadway would run north from K Street along existing 21st Street. At approximately Q Street, the roadway would split to include a one-way pair along 19th and 21st Streets along the low part of the Antelope Valley (so stormwater would flow along the depressed roadway during major storms). The roadway then would turn in the northwesterly direction at Vine Street to a new crossing of the BNSF Railroad. The road would continue on a new bridge over the railroad and align with the existing 14th Street. In the east-west direction, a new roadway would be provided along the north side of the BNSF Railroad mainline, connecting to Holdrege Street on the west and to a new roadway on the east end that would align in a northeasterly direction to 33rd and Superior Streets, including a new bridge at 33rd and Adams Streets.

The community revitalization components of Package C would be similar to those described for Package B. However, with Package C it would not be possible to create a unified Lincoln High School - Elliott Elementary School campus.

Package D - 100-Year Stormwater Conveyance. This package would create an open channel or new conduit starting near Antelope Park to carry all of the projected 100-year stormwater to the channel downstream of Vine Street. This channel would be generally in the lowest point of the valley along 21st Street. Wide, gently sloped banks, a bike trail, and the Trago Park expansion would be closely related to this option. The existing channel north of Vine Street would be reconstructed parallel to the roadway in an efficient joint use corridor. Also, the reconstruction and the new roadway would remove several existing bridges that would not need to be replaced, resulting in improved channel flood capacity; and the existing conduit remains in use.

The transportation concepts in this package would include a new roadway on 19th Street from K and L Streets to about Q Street. North of Q Street, the roadway would split to a one-way pair using 19th and 21st Streets. The one-way pair would rejoin and cross the BNSF Railroad mainline to a new roadway parallel to and on the north side of the railroad. This would connect to a new roadway to the north that would align with 33rd Street at the northeast part of the study area. This new roadway would provide an intersection with an Adams Street extension on the north side of the railroad. Community revitalization components of Package D would be similar to Package C.

2.1.5 Evaluation

Analyses of the four packages included environmental considerations, noise impacts, potential acquisitions, benefits, costs, community support potential and attaining purposes and needs. Ultimately, the most desirable elements of each alternative package were combined into the recommended alternative.

Environmental Considerations. Great effort has been invested during the two-year concept development, refinement, screening and evaluation process to avoid or minimize potential environmental impacts. The *Environmental Assessment Status Report* (April 1997) documented environmental reviews that were conducted to investigate environmental considerations. The analysis reviewed each of the 100+ concepts in terms of potential impacts to wetlands, endangered/threatened species, air quality, noise, permits, wild/scenic rivers, water body modifications, wildlife impacts, water quality and farmland. Maps were prepared identifying parks, water bodies, hazardous sites, wetlands, and sensitive noise receptors in relation to stormwater management and transportation alignments.

The preliminary environmental findings were used to refine concepts and to prepare the packages of improvements. Channel and road alignments were modified in order to avoid impacts where possible. When impact avoidance was not possible, the improvements were modified to minimize potential impacts.

Noise Impacts. The general comparative assessment was made of the potential noise impacts of Packages A – D to see how they compared with each other on this important environmental measure.

The noise assessment process was not applied to the community revitalization and the stormwater management portions of the Packages, as they are not expected to generate any measurably loud noises.

There are two areas where the roadway location in the Packages would potentially impact any residential receptors. They are the only areas with any number of such potential receptors along the packages or alternatives. The areas are located along the eastern edge of North Bottoms, and in the Downtown-Near South-Malone neighborhoods. In the case of the eastern edge of North Bottoms, there is no difference in the location of the North-South Roadway among the Packages.Therefore, there should be no impact differences among the Packages in this area.

In the Downtown-Near South-Malone neighborhoods, the North-South Roadway is located near some residences in two locations: generally along 19th Street south of R Street, or generally along 21st Street south of R Street. Different potential noise impacts

are expected between these two areas. In Packages A & B the roadway is shown along 21st Street extending to Randolph Bypass and then east to Capitol Parkway. In Package C, 21st Street is also used for the new roadway but it stops at K Street. In addition, a one-way pair is used between Vine and R Street, thus giving a somewhat different level of impact including perhaps a small reduction in the noise impact to the portion of Trago Park directly adjacent to the roadway. The North-South Roadway in Package D uses the same 19th Street location.

- Assessment of Noise Impacts

In all Packages and alternatives, the potential noise impacts for a distance of 66 $_{dBA}$ are limited to the residential structures that are near to, or adjacent to the right-of-way line of the new North-South Roadway. This distance equates to somewhat less than about 10 meters (33 feet) of the roadway curb. Table 2.4 shows the number of potential noise impacts.

Table 2.4

ESTIMATED NUMBER OF POTENTIAL NOISE IMPACTED STRUCTURES

Package or Alternative	Number of Locations
Package A	39
Package B	40
Package C	19
Package D	14

Source: AV Study Team

Packages A and B have higher numbers of potential impacts because of the residential area south of K Street. Some front-facing residences in this area would be acquired if the roadway plan in these Packages were used; other remaining structures would be in the potential noise impact area. In addition, some next-tier residences could fall in the potential noise impact area.

The potential impact numbers in Packages C and D are similar, however the locations are different for Package C. In Package C, the potentially impacted residences are in the area where the Malone neighborhood and downtown come together near 21st Street between R and O Streets. In the case of Package D, the residences are located near 19th Street between K and L Streets. This is also a mixed downtown and residential grouping.

In both areas just described, it is unlikely that any form of noise wall or barrier would meet criteria for noise attenuation and not disrupt access to the property.

In addition to traffic generated noise, trains travelling through the four railroad at-grade crossings in the study area also create substantial noise adjacent to several residential areas. With the grade-separations proposed in the plans, trains will no longer whistle at

crossings, nor will there be warning bells at the gates. These areas will be quieter with the grade separations included in all of the Packages, so there were no differences among them in this regard.

In all alternatives above, one of the locations of potential noise impact is the UNL softball field near Vine and 19th Streets. As this area will become a university parking structure, the recreational uses would not be affected in the future. Another common property is a commercial structure on Cornhusker Highway that would have some potential impact, though this is an area of already high traffic levels, and noise.

In summary, the potential noise impacts for roadways in Packages A & B was a large factor, and it was important in the screening process that did not select these Packages for further assessment. It did not appear to those involved in the screening that potential noise impacts would be a major factor in the selection of roadway elements among the choices offered in Packages C and D.

Acquisition Impacts. The general comparative assessment was made of the potential acquisition needs of Packages A – D to see how they compared with each other on this important environmental measure. The assessment process was applied to the community revitalization, stormwater management, and transportation elements of the Packages.

- Transportation

There are two areas in which the roadway locations in the Packages are likely to potentially impact property needs differently. The greater variety of roadway alignments is located in the area between 27th and 35th Streets south of Cornhusker Highway, and in the Downtown-Near South-Malone neighborhoods. In the other areas of the transportation plan there is no difference in the location of the North-South or East-West Roadway among the Packages. Therefore, there are no impact differences among the Packages.

In the Downtown-Near South-Malone neighborhoods, the North-South Roadway is found in two locations: generally along 19th Street south of R Street or generally along 21st Street south of R Street. Different potential acquisition impacts are expected between these two areas. In Packages A and B the roadway is shown along 21st Street extending to Randolph Bypass and then east to Capitol Parkway. In Package C, 21st Street is also used but it stops at K Street and a one-way pair is used between Vine and R Street thus giving a somewhat different level of impact. The North-South Roadway in Package D uses the 19th Street location.

- Stormwater Management

Packages A and B include detention areas for Stormwater Management. Packages C and D include reopening of the channel. There are different acquisition needs for each of these elements.

- Community Revitalization

At the time the Packages were developed it was agreed there were almost no reasons to vary the Community Revitalization definitions among the Packages. All the strategies

would fit within the different roadway or stormwater locations, with little or no change in location or effectiveness.

Later planning efforts did expand the areas proposed for the Northeast Park and Trago Park. These expanded areas are reflected in this analysis. For the Northeast Park they are the same in all Packages. For Trago Park they are not included in Packages A and B because there is no channel in those Packages. They are included and are the same in Packages C and D.

- Assessment of Acquisition Needs

Packages A and B were both expected to have a higher number of acquisition needs because of the roadway extension south of K Street south to Randolph and east to Capitol Parkway. Comparative acquisition needs are shown in Table 2.5. While the number of acquisitions needed for stormwater detention sites was small, each consisted of very large tracts of publicly owned park land. The impact of this park acquisition generated a large amount of discussion, and was ultimately one of the main reasons not to select detention as the stormwater management element.

There was not expected to be a high level of potential impacts for the other two packages. In addition, the alignments proposed in the Packages are intentionally placed at the edges of established communities, often at their border with different types of land uses, such as commercial or industrial uses. These zones typically have higher levels of vacant parcels compared to areas in the middle of commercial areas or residential neighborhoods.

Acquisition of properties for the new channel amounts to about three dozen parcels. The new channel was conceptually placed in the lowest portions of land in the section between Vine and N Streets. This set some of the basic property needs. In addition, the discussion regarding the selection of the new channel element led to a plan that defined this new channel as broad, gently sloped banks with extra landscaping to make the new park aesthetically pleasing. This definition meant that more properties would be acquired for the joint park/flood control plan.

While all alternatives have similar combined acquisition totals, Packages A and B trade fewer stormwater and community revitalization acquisitions for more transportation acquisitions than found in Packages C and D. None of the numbers includes vacant parcels or partial acquisition needs.

In addition to the total numbers of properties impacted, the footnotes provide important differentiation information, especially where the packages adversely affect Section 106 cultural resources (historic, tribal and archeological.) This is because an important part of the screening process during the MIS was to avoid adverse effects on such resources.

Table 2.5
COMPARISON SUMMARY OF ESTIMATED ACQUISITIONS BY ALTERNATIVE

Number of Properties with Structures, by Program Element and Type of Use/Ownership

	Pkg. A	Notes	Pkg. B	Notes	Pkg. C	Notes	Pkg. D	Notes
Community Revitalization								
Residential	6	A	6	A	19	E	19	E
Commercial	8		8		9		8	
Public	0		0		0		1	
Total	**14**		**14**		**28**		**28**	
Stormwater Management								
Residential	0		0		18	F	18	F
Commercial	6		6		15		15	
Public	0		0		2		2	
Total	**6**		**6**		**35**		**35**	
Transportation								
Residential	32	G	37	D+G	18	D	9	
Commercial	28	B	34	B	33		20	
Public	6	C	5		5		6	C
Total	**66**		**76**		**56**		**35**	
Combined Totals								
Residential	38		43		55		46	
Commercial	42		48		57		43	
Public	6		5		7		9	
Total	**86**		**96**		**119**		**98**	
Section 106 Resource In Totals	2		2		5		5	

Notes:
A Trago Park Expansion would not occur with Detention
B Includes one commercial property NRHP eligible
C Includes one public property in NRHP – Arsenal
D Includes one Indian Ceremonial Site
E Includes three residences NRHP eligible
F Includes one residence NRHP eligible
G Includes road extension south of K Street and L.H.S

Packages A – D had a variety of different adverse effects on cultural resources – including acquisition of a NRHP listed resource for Packages A and D, and acquisition of a Native American ceremonial site for A and B. These particular sites, in light of reasonable alternatives being available, were not believed to be reasonable acquisitions – relative to the study purpose and need – nor likely to be acceptable from a Section 106 standpoint. Other acquisition numbers and types are very similar among the Packages.

Transportation Benefits. Table 2.6 summarizes the evaluation of transportation benefits conducted for the four packages. Screenlines are used to analyze overall traffic volumes and capacities at a given point across two or more parallel roadways. Screenlines are shown in Figure 2.5.

The transportation benefits evaluation included an analysis of screenlines to assess the demand on various street segments. Analysis of screenlines (Figure 2.5) provides an opportunity to compare the traffic operational characteristics of various alternatives. It concluded that without any transportation improvements, eight of the 11 screenlines analyzed would result in demand exceeding capacity in the future. With Packages A, B, and C only four screenlines have demand exceeding capacity; Package D has five.

Table 2.6
TRANSPORTATION BENEFITS

	Existing (1995)	Future Conditions*				
		No-Action	A	B	C	D
Daily Vehicle Hours Traveled	140,900	223,800	223,200	223,600	223,600	223,700
% Change Relative to No-Action			-0.27%	-0.07%	-0.07%	-0.03%
Dollar Value (millions) of Annual Vehicle Hours Saved			$2.6	$0.6	$0.6	$0.3
Avg. Speed in Broad Analysis Area	29.0	30.9	31.2	31.0	31.0	31.0
Screenline Traffic Operations (V/C)						
Screenline 1	0.87	1.37	0.90	1.01	1.01	0.82
Screenline 2	0.62	1.07	0.76	0.89	0.89	0.58
Screenline 3	1.12	1.24	1.24	1.19	1.19	1.13
Screenline 4	0.86	1.01	0.68	0.79	0.79	0.85
Screenline 5	0.89	1.30	0.82	0.99	0.99	1.01
Screenline 6	0.87	1.03	0.88	0.95	0.95	1.02
Screenline 7	0.74	0.91	0.91	0.95	0.95	0.86
Screenline 8	0.87	0.97	1.05	0.95	0.95	0.79
Screenline 9	1.09	1.19	1.25	1.29	1.29	1.30
Screenline 10	1.05	1.37	1.31	1.27	1.27	1.20
Screenline 11	0.65	0.92	0.94	0.97	0.97	0.93
Traffic Reduction on Neighborhood Streets	forecast volumes		% reduction relative to No-Action			
P Street east of 21st Street	9,000	10,400	-8.3%	NA	NA	-94.63%
Y Street east of 21st Street	2,100	3,900	2.6%	26.2%	26.2%	87.0%
Holdrege Street east of 21st Street	14,400	14,800	-13.6%	-17.5%	-17.5%	-35.8%
16th and 17th Streets south of Vine Street	34,500	43,100	-55.7%	-56.3%	-56.3%	-65.2%
Traffic Volumes on Selected Roadways	forecast volumes		% change relative to No-Action			
27th Street north of Holdrege	30,700	38,800	-6.5%	-17.6%	-17.6%	7.0%
33rd Street south of Cornhusker	12,000	22,300	98.3%	NA	NA	NA
27th Street north of O Street	30,000	35,700	-17.8%	-11.4%	-11.4%	-14.4%
Safety						
Grade crossings eliminated	N/A	0	4	4	4	4

*Traffic forecasts for "future conditions" are based on a future "Build Out Scenario" that includes an approximate 44% increase in regional trips. The Future Build Out Scenario is based on City of Lincoln-Lancaster County Planning Department's traffic forecasting models.
Source: Antelope Valley Study Team

Figure 2.5

Analysis of travel benefits in terms of vehicle miles and vehicle hours saved was also undertaken for each package. The regional time expended for the No-Action Alternative was the highest at 223,800 daily vehicle hours traveled. Package A was the lowest at around 223,000 daily vehicle hours. Examining the dollar value of annual vehicle hours saved, Package A saved an estimated $3 million per year. Package A also provided the highest average speed at 50.2 kilometers per hour (31.2 miles per hour).

Capital Costs. The preparation of conceptual capital cost estimates was an important part of the technical analyses that led to the selection of the Draft Single Package, recognizing that the packages were based on only limited amount of conceptual design. Separate cost exercises were undertaken for the stormwater management, roadway, and community revitalization components of Packages A, B, C, and D. Costs were prepared using the standard engineering practice of quantifying the type and number of different units of which the components are comprised, identifying the number of various units required, and then multiplying. The resulting subtotals were added to arrive at the overall cost for the various packages considered.

Table 2.7 presents capital cost estimates for each of the four packages. For each package, the cost of stormwater management, transportation, and community revitalization elements is documented (there is considerable interdependence among the components of the packages). The costs were modified, as design concepts were refined during the conceptual engineering phase. Additional information regarding capital costs is documented in the *Capital Cost Summary Report* (November 1997).

Table 2.7

CAPITAL COST ESTIMATES OF ANTELOPE VALLEY "PACKAGES"
(in millions of 1997 dollars)

	Packages			
	A	**B**	**C**	**D**
Stormwater Management Elements	$44 - 58	$30 – 45	$25 - 56	$23 - 57
Transportation Elements	$80	$101	$101 – 103	$92
Community Revitalization	$72	$73	$73	$71
Total	$196 - 210	$203 – 219	$199 – 231	$186 - 221

Source: *AV Capital Cost Summary Report*, 1997.

Costs for the packages range from $186 million to $231 million. The transportation elements, at $80 million to $103 million, are the most costly, followed by community revitalization at approximately $72 million. The most expensive stormwater management cost estimates are $44 to $58 million for the detention concept in Package A. The ranges of stormwater management costs for Packages B, C, and D indicate the differences associated with alternative cross sections for conveyance

channel or roadway. Typically, the wider cross sections have a lower construction cost, although the costs and impacts related to acquisition are greater.

Community Support Potential. Packages A-D served as a set of different options for providing a wide variety of transportation and stormwater management solutions; each community revitalization sought to achieve the Purposes and Needs of the Study. In concept, the Packages provided an effective variety of alternatives to compare and contrast. As expected and desired, each received varying levels of community support. The development of the Draft Single Package took into account the positive support gained from community members on various aspects of the Packages.

Attaining Purposes and Needs. Packages A-D were analyzed in relation to how well they achieved the Purposes and Needs set forth in the Antelope Valley Study. Table 2.8 below illustrates a comparative ranking of each of the packages in relation to attaining the Purposes and Needs of the Study. Packages C and D ranked the highest overall in attaining the Purposes and Needs, especially for the eight Purposes and

Table 2.8
ATTAINING PURPOSES & NEEDS

	PACKAGES				ALTERNATIVES	
	A	B	C	D	NO ACTION	ADSP
Stormwater Management	◕	◑	◑	●	○	●
Land Use Patterns	◑	◑	◕	◕	○	●
Traffic Operations	◕	◑	◑	◕	○	●
Safety	◕	◕	◕	●	○	●
Youth Recreation	◑	◑	●	●	○	●
Trail Continuity	◔	◔	●	●	○	●
Neighborhood Vitality	◕	◕	●	●	○	●
Downtown Vitality	◑	◑	◕	●	○	●

Source: Antelope Valley Study Team

Comparative Scale: Best ● Better ◕ Good ◑ Worse ◔ Worst ○

Needs related to Community Revitalization. While the stormwater management aspects of Package A were more desirable than those in Packages B and C, the detention areas and use of roadways for conveyance created conflicts for park use, continuous land use patterns and trail continuity. The development of the Draft Single Package

resulted in a combination of the best elements of each of the individual packages analyzed to effectively meet the purposes and needs of the Study.

2.1.6 Determining the Draft Single Package

The Draft Single Package was created from the best elements of each of the four packages. The packages were developed with the intent to highlight differences among packages, therefore it was likely that some elements of each package would be carried forward in the Draft Single Package to create the most practical and feasible solution, i.e. to find the reasonable alternative(s). In creating the Draft Single Package and considering which elements were to survive, the overriding question was a simple one: *Is it best for the Greater Community?*

The values expressed by Advisory Committee and Management Committee members were key when answering this question as the four alternative packages were dissected and reformed into one. Other resources, including meetings with neighborhood associations and the general public also contributed. Where elements from the four packages provided similar benefits with similar potential impacts, the Draft Single Package incorporated the lower cost option.

Producing the Draft Single Package hinged on resolving issues related to four subjects. Other segments of the Draft Single Package simply linked these key areas. Therefore, in developing the Draft Single Package the focus was on:

- the selection of either detention or conveyance, or some combination, as the best stormwater solution;
- the traffic flow and neighborhood issues affecting the 33rd Street Hub design;
- the 17th Street Hub's traffic flow issues; and,
- the community revitalization opportunities and differences when choosing a 19th Street or a 21st Street roadway location south of Vine Street.

Detention or Conveyance. Preventing the damage caused by large-scale flooding would help Lincoln in many ways. To accomplish this, the stormwater expected in a flood can be handled one of two ways: it can be *detained* in newly constructed storage facilities resembling ponds until it is safe to slowly release the water or it can be *conveyed* in streams, conduits, channels, or depressed roadways.

- *Detention* -- While successful elsewhere, a number of obstacles make implementing detention in Antelope Valley (Package A) unreasonable. What seemed on the surface an attractive stormwater solution quickly becomes burdened with questions about costs, responsibilities and effectiveness. Multi-agency management, social and physical complexities associated with providing detention on the Lincoln High School/Elliott Elementary School campus, and high cost estimates eliminate this location from further consideration. Furthermore, the Lincoln/Elliott site is required to accommodate the majority of water volume predicted in any serious flood control operation--the remaining detention sites would not make up the difference.
- *Conveyance* -- The conveyance option offers a more practical and reasonable solution because of its superior flood control reliability. This is true when considering the infinite variety, measured in amounts and duration, of potential floods as well as the geographic distribution of the rainfall. Both the more expensive

concrete-channel conveyance and the less costly wide, grassy option provide effective flood control.

The wide, grassy, open-channel conveyance emerged as the preferred stormwater conveyance solution because it restores the Antelope Creek channel and provides an aesthetically compatible green area that harmoniously blends into the existing residential and park setting. This is especially true in the area of Trago Park where the conveyance option allows desired park expansion.

Another benefit of the conveyance option is its ability to provide a continuous bicycle path from Holmes Lake to Salt Creek. Rather than loosely linking several detention sites, conveyance presents the opportunity to provide the community with a lengthy off-street trail.

- *Combined Detention and Conveyance*-- Providing a combination of detention and conveyance was also considered. When examined as part of a joint system, the costs are considered prohibitive, requiring the more expensive parts of both conveyance and detention. Thus, a combination of detention and conveyance (Package B) is not a practical, feasible, or reasonable solution.

While conveyance, detention, and combined solutions were considered, detention is not feasible due to the higher cost and unacceptable community impacts. Conveyance alone was favored as reasonable and eventually was selected for the Draft Single Package. Note: This topic is discussed again at Section 2.1.7 “Open Channel or Limited Closed Conduit” and “Road and Water Conveyance Between Beadle Center and Trago Park”.

33rd Street Hub. The 33rd Street Hub is the area where 33rd Street, Adams Street, and Huntington Avenue connect to Cornhusker Highway and the East-West Roadway. This area was studied to accommodate traffic needs resulting from high growth to the north of the study area and to protect established residential neighborhoods nearby. Also, with a major increase in railroad activity expected, any new roadway design must eliminate the lengthy wait drivers now experience at the railroad crossings.

Packages A, B, C and D offer three different roadway configurations for the 33rd Street Hub area. For each package, the overall traffic performance was considered as well as the potential traffic impacts to 27th Street, 33rd Street, Cornhusker Highway, and Adams Street (especially to nearby residences). The more direct north-south 33rd Street alignment in Package A offers travelers a modest amount of time savings compared to other packages. When reviewing forecast traffic volumes for Package A (with a more direct north-south 33rd Street alignment) and Package D (with a 33rd Street Hub as in the Draft Single Package), 27th Street traffic volumes are expected to be similar. Each package sufficiently accommodates traffic through the 33rd Street Hub and the traffic analysis does not indicate one as a clearly superior design. To maintain good access and visibility to businesses along Cornhusker Highway, the Amended Draft Single Package maintains 33rd Street with an underpass of the BNSF Railroad.

The Draft Single Package proposes an underpass near 29th Street to help area drivers avoid the increasing delays expected from the railroad line. Existing at-grade rail crossings at 33rd Street and 35th Street would close under the Draft Single Package.

With the increase in train activity along this key railroad line, area drivers would save time with the new 29th Street underpass. Note: This topic is discussed again in Section 2.1.7 "Cornhusker Highway and 33rd Street Area".

Also, the westward extension of Huntington Avenue in this vicinity improves access to and visibility for the Draft Single Package's Northeast Community Park. The new 13-hectare (33-acre) park provides greatly enhanced and needed active recreation opportunities for nearby residents.

Finally, some road alignments are shifted slightly in the area between Cornhusker Highway and Superior Street to better avoid rare saline soils and wetland areas, as well as cultural resources.

17th Street Hub. The 17th Street Hub includes the large railroad grade separation structure where the North-South Roadway and East-West Roadway connect at an elevated intersection. Consideration of this complex hub is important because it affects the amount of cut-through traffic in the UNL and in nearby neighborhoods. It is also crucial to design a hub compatible with the North-South and East-West Roadways. The Draft Single Package design accomplishes both objectives: providing long distance travelers with an efficient route while discouraging use of local neighborhood streets by these same drivers as well as maintaining many local street connections so that local travelers may still reach nearby destinations easily.

Under the Draft Single Package, the western end of Holdrege Street would terminate at 17th Street, then proceed south to Y Street—a configuration required to avoid the new North-South Roadway and conveyance structures. This design also discourages use of Holdrege and 17th Streets by pass-through drivers, accomplishing traffic-control objectives desired by the community and the UNL. This changes some neighborhood access, however, for travelers seeking local access. An indirect route is available, for example, for traffic wishing to continue south on 17th Street or 16th Street. That traffic would turn off Y Street at the new roadway to connect with these streets.

Another key 17th Street Hub element is the overpass design. The North-South and East-West Roadways meet over the railroad tracks, a scheme that eliminates conflicts and delays now occurring between surface streets and the railroad. The overhead intersection also links to the extended roadway that would parallel the BNSF Railroad tracks. While located north of the tracks, this route remains south of the State Fair Park, avoiding the historic buildings on the State Fair Park.

Nearby, future redevelopment opportunities exist on the Nebraska National Guard property (also known as the "military area") and some parts of the State Fair Park if they choose to someday relocate all or some of their current activities.

New North-South Roadway. Several community-related issues arise when considering the North-South Roadway along 19th Street (Package D) or 21st Street south of X Street (Packages A, B, and C). Essentially, two different pictures emerge. One encourages strong economic development while the other maintains UNL land/property cohesiveness. The Draft Single Package recommends a 19th Street road that, slightly modified, accomplishes both goals.

The primary strength of the 19th Street roadway is that it would support more

community revitalization objectives with the least amount of displacement in the Malone neighborhood. The potential for more new housing, mixed land uses, and a new supermarket is improved under the 19th Street route. Furthermore, the conveyance option allows creation of an attractive park setting with an open channel in the vicinity of the 21st Street corridor. This conveyance/park combination provides an amenity for new housing and for Malone residents. The 19th Street roadway would also permit showcasing the old Rock Island train station, now a bank, located near O Street and raises the possibility of tying the area into Market Place redevelopment along P Street.

The 19th Street option offers Lincoln a stronger community revitalization package than the 21st Street roadway, along with the possibility for expanding Trago Park. However the 21st Street option better maintains the integrity of the UNL properties. Therefore, it was desirable to combine the strengths of both into one. The Draft Single Package includes construction of a 19th Street that curves around the east side of the Beadle Center along 21st Street. This reasonable alternative preserves UNL property cohesiveness, encourages development of a comprehensive set of community revitalization objectives, and allows expansion of Trago Park. Note: This topic is discussed again at Section 2.1.7 "Single Two-Way Road Corridor or One-Way Pairs" and "East-West Downtown Grid Network".

The park expansion (accomplished by adding to Trago Park the partial lots remaining without public access between the conveyance slopes and existing Trago Park) enhances nearby properties while providing a major mitigating factor for using land east of the Beadle Center by the new roadway. Construction of the new park would entail some local street closings, which make the new park more expansive and a more enjoyable place to visit (see also Section 7.2.1).

Accomplishing the roadway, conveyance and redevelopment objectives would require acquisition of 33 residential structures. Also, some structurally sound houses acquired for Antelope Valley projects may be selected by the City of Lincoln for a separate community revitalization program to be moved to currently vacant property nearby. This helps preserve some of the area's rich architectural heritage. In this way, families choosing to stay in the area can maintain close ties in their community. Of course, others may prefer relocation and would take advantage of the legally mandated relocation process (see Section 4.5 for a description of the process).

Community Revitalization. The Community Revitalization elements of the four packages are very similar to each other, and the Draft Single Package incorporates the community revitalization elements. Strategies include a new downtown supermarket, mixed-use development, traffic calming, improved land use transitions, closer-to-home strategies (landscaping, sidewalk and alley repairs), new downtown housing, a new employment center, new bike trails, a new 13-hectare (33-acre) park, expansion of Trago Park, a new medical clinic, and wrap-around centers (at the Indian Center/Armory, Whittier Junior High School, North 27th Street/Community Center, Malone Center, and/or Elliott Elementary School). Chapter 3 documents the community revitalization elements of the Draft Single Package.

2.1.7 Refining and Amending the Draft Single Package

Early in 1998, citizens and business owners identified several key issues regarding the

Draft Single Package. The Lincoln City Council specifically directed the study team to investigate these issues, referred to informally as "hot buttons," prior to proceeding with functional design of the Draft Single Package.

The AV Study team conducted a series of meetings including 30 meetings with North 33rd Street business and property owners, the Malone neighborhood Association, the Malone Center Board, the Malone Foundation, the Downtown Lincoln Association (DLA), the DLA Antelope Valley Subcommittee, and N Street property owners. The Advisory Committee also met nine times from May to August to debate the "hot buttons." The topics of concern were as follows:

- Single Two-Way Road Corridor Downtown or One-Way Pairs
- Impacts to East-West Downtown Grid Network
- Open Channel or Limited Closed Conduit
- Traffic Access at the Cornhusker Highway and 33rd Street Area
- Methods to Convey Traffic And Water Between Beadle Center and Trago Park.

Study participants reached a consensus on all of these topics. A Super Commons meeting (a joint meeting of the City Council, County Commissioners, Planning Commission, and the Mayor's Office) again endorsed the Draft Single Package. There were several important modifications and requests that the City of Lincoln-Lancaster County Planning Commission conducts a public hearing regarding the Draft Single Package. Representatives of the City of Lincoln, Lancaster County, the Lower Platte South Natural Resources District, and UNL attended the Super Commons Meeting.

- **Single Two-Way Road Corridor or One Way Pairs.** As part of the "hot buttons" debate, an alternative to the Draft Single Package was to have a one-way pair of streets (18th/19th, 19th/20th, or 19th/21st) between Capital Parkway and the Beadle Center. Discussions by the Advisory Committee and the Downtown Lincoln Association (augmented by some nearby 19th and N Street business representatives) reviewed traffic and development considerations of both roadway types. The negatives of the one-way road alternatives were more rights-of-way needed to transition back into the single two-way road corridor east and north of the Beadle Center, and disruption to potential development on the transition block(s). Left turns from Q and O Streets to the North-South Roadway would unacceptably disrupt east-west traffic, and one-way streets would not allow assembly of larger parcels to attract different, complementary development (neighborhood grocery store, large employer campuses, housing). They would not compete with the present block sizes and land uses in traditional downtown. North-south traffic flows would be marginally better with the one-way pairs, but not enough to overcome the disadvantages.

  Therefore, the consensus for the Amended Draft Single Package was to keep the Draft Single Package single two-way road corridor along 19th Street, but acquire the whole frontage parcels along the west side of 19th Street between K and Q Streets. This would generally permit a wide enough right-of-way to allow an extra wide landscaped median and to assist pedestrian flows across the new street. This was determined the most practical, feasible, and reasonable solution.

- **East-West Downtown Grid Network.** The Draft Single Package as defined in early 1998 had both P and N Streets with limited right turning movements at the North-South Roadway, and no bridges across the new Antelope Creek waterway. It also showed Q Street with two-way traffic between 9th and 27th Streets and a bridge over the new waterway.

  The alternatives suggested would permit full turn movements at the P and N Street intersections, provide bridges over the waterway, and provide access to 27th Street. Discussions of the alternatives by the Advisory Committee and the Downtown Lincoln Association (augmented by some nearby neighborhood and business representatives) reviewed the traffic flow, access and development considerations.

  The negatives of P Street remaining open to 27th Street would be congestion of intersections of the new North-South Roadway between O and Q Streets. Also, the constraint placed on assembly of land and development for the future extension of Market Place (between 17th Street and the new waterway, between O and Q Streets), the added traffic to 27th Street further congesting the 27th and O Streets intersection, and encouraging more non-local traffic through the Malone community.

  Disadvantages of N Street were less severe, though the advantages of continued access to downtown and to the area businesses along N Street appeared to outweigh the disadvantages. City Public Works Department indicated that downtown traffic flow would work better if Q Street between 9th Street and 17th Streets remain one-way westbound. This would provide better access to Downtown.

  Further discussions of the Advisory Committee and its subcommittees after the "Hot Button" settlement indicated a growing preference for keeping P Street open at the channel and maintaining P and Q Streets as a one-way pair west of 27th Street. The addition of a bridge at the channel increases the stormwater management capital cost and reduces the traffic efficiency on the North-South Roadway as well as North 27th Street in the vicinity of O Street yet maintains local access as currently provided. This change would be included in the Amended Draft Single Package when the City of Lincoln considers all comments on the DEIS and makes its formal Comprehensive Plan change. Some think that should a developer come forth interested in building the larger land development possible with a closed P Street at the channel, the plan could be revisited if the bridge had not yet been built.

  The Amended Draft Single Package leaves P Street and the North-South Roadway intersection open with as many turning movements as feasible and includes a new bridge over the new waterway at P Street. Turning restrictions for certain traffic movements at the intersection of P Street and the roadway may be warranted in the future if traffic congestion/stacking becomes too severe or if a major redevelopment project(s) is constructed east of said intersection. N Street would remain open with as many turning movements as feasible with a bridge over the waterway at N Street. Q Street between 9th Street and 17th Street would be one-way westbound and Q Street between 17th Street and North 27th Street would be two-way traffic. This was determined the most practical, feasible, and reasonable solution.

- **Open Channel or Limited Closed Conduit.** Some neighbors of Trago Park reproposed an alternative to the new waterway for Antelope Creek from J Street to Salt Creek. They suggested enclosing a portion of Antelope Creek 100-year floodwaters into a conduit that would be built between the south side of S Street to the north side of Vine Street along the western edge of Trago Park. Under this alternative, the balance of the waterway would be open.

  Discussions from the Advisory Committee and neighborhood meetings (including neighborhood representatives from throughout the study area) focused on the amount of active flat recreation and open space area. There would be a comparable amount of flat play space under the Draft Single Package approximately 3.3 hectares (8.2 acres), as currently exists 3.4 hectares (8.5 acres), plus an additional 3.0 hectares (7.5 acres) of additional sloped park land, open space and other recreational amenities associated with the waterway. With the open waterway, bike-hike trail users would be able to enjoy the aesthetics of the waterway and pass safely under Vine Street.

  Some citizens expressed fear and concern for small children's safety while playing in the park or at Malone Center near the open waterway. Most people felt the safety of the open waterway could be addressed. There are many neighborhoods with open channels throughout Lincoln and safety has not been a serious problem. The limited conduit section proposed as an alternative to the Draft Single Package would increase the potential project's costs by 6.5 million dollars, possibly losing the economic and aesthetic value of the open waterway. It is likely the Corps would fund none of the added costs for a limited conduit if it caused the new total cost to exceed benefits.

  The Amended Draft Single Package would keep the open channel for Antelope Creek and acquire additional parkland and recreational amenities for Trago Park. This was determined the most practical, feasible, and reasonable solution.

- **Cornhusker Highway and 33rd Street Area.** The Cornhusker and North 33rd Street businesses proposed several alternatives for the 33rd and Adams Street railroad grade crossings. They include: a) keeping both grade crossings open, b) building a second underpass at North 33rd Street or Adams Street and leaving the other grade crossing open, or c) grade separating both North 33rd and Adams Streets.

  After much discussion and review, the Advisory Committee and subcommittee (including additional business and neighborhood representatives from surrounding area) methodically narrowed down the list of alternatives based upon overall traffic pattems, local business access, minimization of through traffic on North 33rd Street south of Huntington Avenue, and railroad crossing safety. The best alternative to emerge included adding a second underpass at North 33rd Street. As a compromise to overcome previous traffic concerns, it would, however, be three lanes wide- the same as 33rd Street to the south, to discourage widening of the street through residential neighborhoods. The single down side with this alternative is the additional three million dollar cost.

The consensus for the Amended Draft Single Package was to add a second underpass at 33rd Street under the BNSF Railroad. This was determined the most practical, feasible, and reasonable solution.

- **Road and Water Conveyance Between Beadle Center and Trago Park.** The Draft Single Package shows the North-South Roadway physically fitting between the Beadle Center and Trago Park, with the open waterway east of the North-South Roadway and incorporated into the western edge of Trago Park. Some concerned citizens and UNL staff expressed a desire to minimize any negative roadway or waterway impacts on the Beadle Center and Trago Park. The Advisory Committee re-proposed several alternatives for further study: a) construct a short distance of stormwater conduit east of Beadle Center, b) move the roadway to the west side of Beadle Center along 19th Street and modify existing 19th Street right-of-ways from K to Vine Streets, c) locate the open waterway west of the Beadle Center and keep the roadway east of the Beadle Center, or d) construct a four-lane roadway rather than a six-lane roadway.

  The dedicated Trago Park land extends west from 22nd Street to a line about half - way between Beadle Center and Malone Center--the existing bike trail is on the dedicated parkland. West of that boundary is the UNL City Campus. Section 4(f) of the US Department of Transportation Act requires protection of public parks and recreation spaces unless there are no other feasible and prudent alternatives. Placing the roadway on the UNL City Campus just west of Trago Park is the only feasible and prudent alternative (See Chapter 7 for a discussion of Section 4(f) issues). Moving the roadway east, away from the Beadle Center, and into the Malone community and/or Trago Park is not feasible and prudent, nor is moving the roadway west of the Beadle Center where other public recreation space would be adversely impacted.

  Placing Antelope Creek in an enlarged underground conduit, whether in Trago Park or under the North-South Roadway would not permit the roadway to shift further east of the Beadle Center than shown in the Draft Single Package. Section 4(f) of the US Department of Transportation Act prohibits shifting the roadway eastward into Trago Park. Furthermore, any added expense of building the conduit would have the same drawbacks as those of the limited closed conduit discussed above.

  The question of four through lanes versus six lanes has some bearing on this issue, as well. Both four lanes and six lane designs would fit on the UNL City Campus east of the Beadle Center and not use any of the dedicated Trago Park land. Shifting the four-lane roadway away from the Beadle Center would still avoid Trago Park, while minimizing perceived impacts to the Beadle Center. Consensus on the Amended Draft Single Package is to acquire a six lane right-of-way but only construct four lanes in the initial phase. This allows for a more landscaped boulevard and still provides an opportunity for lane additions in the future if congestion warrants. This was determined the most practical, feasible, and reasonable solution. This is also consistent with the Section 4(f) determinations.

2.2 Amended Draft Single Package

From months spent developing various options, testing their performances and costs, listening to Lincolnites and reworking the options, the study team forged a unified package addressing stormwater management, transportation, and community revitalization. As shown on the map in the front of this document, the package fused together the best elements, measured in terms of performance and cost, from the four alternative packages, and included refinements based on the intense public debate regarding the "hot buttons."

The Lincoln/Lancaster County Planning Commission and City Council again met and held public hearings on the "hot buttons." Subsequently, the planning commission, which is also the Metropolitan Planning Organization (MPO), adopted a revised preferred alternative known as the Amended Draft Single Package in its *Comprehensive Plan*. The Amended Draft Single Package is the MPO's preferred Major Investment Strategy. It is also the MPO's determination as the only reasonable alternative for full NEPA evaluation (as well as the No-Action Alternative).

2.2.1 Stormwater Management

The stormwater management component of the Amended Draft Single Package is focused on providing an Antelope Creek conveyance system that has adequate channel, bridge, and existing conduit capacity to reduce the designated100-year floodplain to within the limits of a planned channel corridor. A new stormwater conveyance channel and improvements to the existing channel would combine to provide a new open water system extending from N Street, northward, to Salt Creek. At N Street, the channel would be extended from Antelope Park, paralleling 21st Street on the east side. The channel would gradually turn westward one block beginning near R Street to the western border of Trago Park, turn north, and continue to Vine Street. There it would reconnect with the existing channel to Salt Creek. The conveyance system would fully accommodate the designated 100-year storm, make available for development land that is currently within the floodplain, and provide an opportunity for a continuous bike trail around the east side of downtown.

The US Army Corps or Engineers has completed a Draft Feasibility Report and Draft Environmental Assessment analyzing the potential stormwater management improvements in the lower Antelope Creek basin. This report is incorporated by reference in this EIS.

South Street and 38th Street Bridges. The most upstream elements of the improvements would eliminate existing bridge restrictions at 38th Street and at South Street. During intense storms the bridges backup water in Antelope Creek and cause overflow flooding to occur in the South Street and Normal Boulevard vicinity. Flooding also occurs in commercial and residential areas north of South Street as water flows overland on its way downstream back towards the creek.

To relieve that existing flood hazard, removing the restrictive bridges would allow the water to continue down the creek corridor in an unimpeded course. Constructing a new South Street bridge with improved hydraulic capacity is included in the Amended Draft Single Package. Closing 38th Street at Antelope Creek, removal of the bridge, and

construction of an open channel across 38th Street are proposed because the cost of a new bridge appears to be unjustified by the local traffic volume of the street. Water distribution, sanitary sewer, and natural gas utility crossings of Antelope Creek will be lowered to resolve the existing 38th Street and South Street flow restrictions. Concerns of some landowners along 38th Street relate to loss of access; however, alternative access is available by at least four routes within two blocks.

Open Channel to Supplement Existing Antelope Creek Conduit. In about 1915, a 3-meter by 6-meter (10-foot by 20-foot) concrete conduit was constructed to convey the flow in Antelope Creek from south of N Street to north of Vine Street. The original creek channel was filled in and obliterated in this reach and the stormwater was conveyed in the new conduit. The general public forgot that a creek channel historically existed in that area of Lincoln. The creek valley was fully developed with businesses and residences, unintentionally creating a substantial flood hazard that was largely unrecognized.

In 1994, the conduit was lined creating twin 2-meter by 3-meter (8-foot by 9-foot) conduits to restore structural integrity and avoid collapse. The restoration substantially extended the service life of the conduit, but reduced its hydraulic capacity from about a five-year frequency storm to approximately a four-year storm capacity. When greater storm events occur the conduit entrance backs water up in the Antelope Creek channel. In larger storms, it would back up high enough to overflow the banks and floodwater will flow through the businesses and neighborhoods between N and Vine Streets.

The floodplain area has been mapped by the Federal Emergency Management Agency (FEMA) and is regulated by the Lincoln Floodplain Ordinance. Much of the floodplain property currently has a high potential for redevelopment. However, locally adopted floodplain management regulations prohibit most development in the floodplain to avoid potential flood hazard costs, and due to the lack of a delineated floodway through the area.

The Amended Draft Single Package re-establishes an Antelope Creek channel through the area. The channel would occupy a corridor approximately one-half block in width, generally following the lowest portion of the designated 100-year floodplain. A gently sloped, landscaped channel and bridge system is envisioned to provide flood capacity within a park-like setting. The resulting multi-purpose corridor would include a small, aesthetically designed open channel at the bottom of the flood channel and a trail to facilitate public use and access most of the time when the flood carrying capacity is not in use. A graphic illustrating typical channel cross sections is provided at the end of this chapter (see Figure 2.11). Landscaping designs will focus plantings near the low flow portion of the channel and along the tops of the banks to minimize debris and other flood control impacts.

The upper end of the conveyance improvements would be at J Street. The existing Antelope Creek channel between J Street and the conduit entrance needs minor improvements to prevent floodwater from overflowing outside the planned open channel corridor before it reaches the conduit entrance. The capacity of this segment of the open channel would be increased by limited widening the east side of the

channel to avoid affecting softball fields and park facilities along the west open channel bank. The flow line of the channel would also be improved to provide a positive flow to the north. The channel improvements would employ vegetative stabilization methods to minimize the visible amount of concrete or other “hard” stabilization materials included in the finished channel landscape.

A short distance upstream of the existing conduit entrance, the new open channel would curve to the west towards the intersection of 21st and N Streets (see fold-out map at the beginning of this document). The improved channel gradient north of J Street would lower the flow line near the conduit entrance so the water normally flowing in the creek would follow a small (2 to 3 meters, or 8 to 10 feet wide) open channel constructed within the bottom of the floodway channel. A control structure will direct the different levels of flow to the proper conveyance. During flood events, the capacity of the existing conduit would be utilized, with additional flows subsequently carried by the new channel.

The new open channel would then run northwesterly along the edge of Antelope Park and curve north through commercial property to cross N Street east of 21st Street. The channel would continue northerly east of 21st Street, crossing beneath new bridges at N and O Streets. The new channel would also provide a route for the trail system to cross under N and O Streets. The new channel and trail corridor would be designed and landscaped to be viewed from O Street as an aesthetic open channel/green space in the midst of the city.

North of O Street, 21st Street would remain open for traffic. The landscaped channel and trail corridor would run along the east side of 21st Street through P, Q, and R Streets. New bridges at P and Q Streets would be provided, but R Street would be closed east and west of the open channel. North of R Street, the open channel would curve west to S Street, which is closed today. Widening the channel bottom between O and Q Streets creates a new 0.75 hectare (1.85 acres) lake. This lake would be the focus area for community activities and would be an attractive incentive for redevelopment of the four-block commercial area to the west that is shown in the community revitalization plans, as well as the Malone neighborhood on the east.

North of S Street, the open channel and trail would be constructed along the west edge of Trago Park. The landscaped open channel would buffer the Malone neighborhood, including the park and the Malone Center, from the new North-South Roadway. As the roadway and open channel corridors merge together, the west bank of the channel would transition into a near vertical, architecturally-detailed retaining wall to minimize use of space between the Malone Center and the Beadle Center, and reduce visual and traffic noise intrusion in the park. North of the Malone Center, the open channel and trail would run beneath a new Vine Street bridge. The channel would merge with the existing channel downstream of the existing conduit exit located north of Vine Street.

Where the open channel and roadway are adjacent within a combined corridor, the open channel would provide drainage for the roadway. Savings in roadway storm sewer construction would be possible because of the nearby storm drainage outlet.

Reconstructed Open Channel Along North-South Roadway. North of Vine

Street, a joint roadway/flood channel corridor would minimize the total right-of-way requirements through the adjacent, UNL and industrial property. This would be accomplished by use of steeper slopes in this section compared to the rest of the channel. The channel slopes of north of Vine Street would be slopes ranging from 1:2 to 1:3 (2:1 to 3:1).[1] The existing creek channel has too many sharp curves near the existing bridges to accommodate an adjacent roadway. Three of the five existing railroad bridges are now UNL pedestrian bridges and a fourth railroad bridge would become unnecessary in the near future because of a segment of an approved railroad abandonment. Therefore, it is feasible to realign the channel to parallel an alignment determined to be best for the Antelope Valley roadway and channel together.

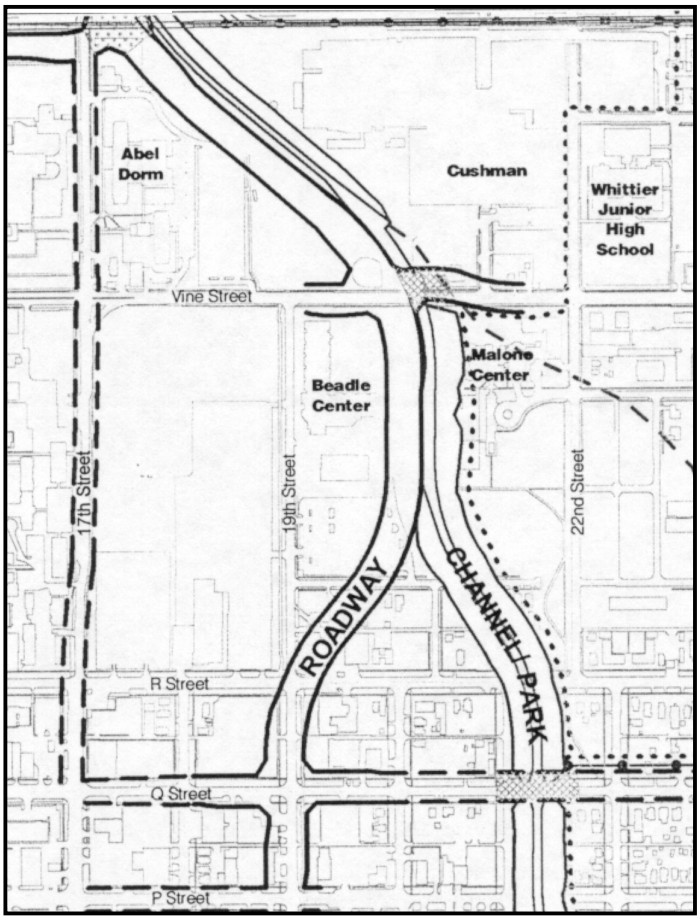
Relocation of the creek channel to resolve roadway alignment conflicts would provide an opportunity to also improve flood channel hydraulic capacity and remove the 100-year storm flood hazard from the adjacent properties.

Constructing a landscaped flood channel that includes a trail and architecturally designed open streambed would also serve as a visual improvement/buffer for the roadway and the adjacent properties. Landscaping designs will focus plantings near the low flow portion of the channel and along the tops of the banks to minimize debris and other flood control impacts. The relocated creek channel would run along the northeasterly edge of the new roadway from just north of Vine Street through the existing 17th and Y Streets intersection, which would be closed. The new creek channel would then continue northwest to the existing Antelope Creek bridge at the BNSF Railroad. The creek opening beneath the existing BNSF Railroad would be improved for better hydraulic capacity and an important, wide pedestrian and bicycle path would be opened under the railroad. A landscaped, hydraulically improved creek channel would be constructed from the BNSF Railroad north, through Court Street (bridge removed) and State Fair Park's west entrance from 14th Street to the confluence with Salt Creek. A new bridge would be constructed to accommodate re-aligning the State Fair Park entrance to improve its intersection with the Antelope Valley roadway and Military Road.

2.2.2 Transportation

A new north-south arterial in the 19th Street corridor from K Street along the east side of the UNL City Campus, continuing north over the BNSF Railroad and connecting to 14th Street near Military Road would be provided. The arterial would be four lanes initially and ultimately six lanes wide, depending on traffic demand, and include a landscaped median. The new arterial would intersect a new east-west road structure at a signalized intersection. The East-West Roadway would connect Avery Avenue at 10th Street to a new roadway on the north side of the BNSF Railroad. It would continue north to Superior Street, where it would align with 33rd Street north of Superior Street now under construction. A connection between the new East-West Roadway at 27th Street and Adams Street would also be provided, and would pass beneath the railroad mainline north of a Northeast Community Park. The transportation improvements would improve traffic flow for regional traffic, thereby removing traffic from neighborhood and UNL streets, as well as improve safety by removing four at-grade railroad crossings.

[1] Slopes are represented in metric (rise:run) with English (run:rise) in parentheses.



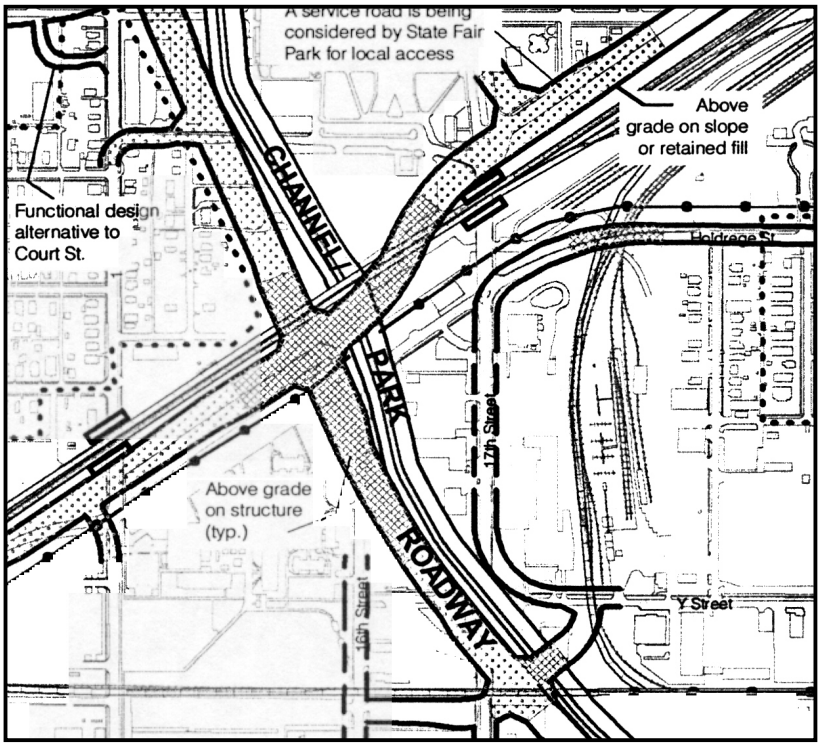
Source: Antelope Valley Study Team

Figure 2.6: North South Roadway Passes East of Beadle Center

The roadways shown in the Amended Draft Single Package have been designed to minimize adverse impacts to established neighborhoods. Special care has been taken to locate the roadways at the edges of cohesive neighborhoods rather than through the middle of them. However, a total of 24 businesses and 12 families along 19th Street, between K and R Streets, between 15th and 16th Streets north of the BNSF Railroad mainline tracks, and between 33rd and Adams Streets south of the railroad are relocated (see Section 4.5). The 1998 discussion of "hot buttons" included coordination with business owners in an effort to minimize potential traffic impacts to the homes and businesses in the 33rd Street area and in the downtown area. Plan views of three-lane, four-lane undivided and six-lane divided roads, are shown at the end of this chapter (see Figure 2.10).

A new North-South Roadway would begin at K Street and proceed north along 19th Street to R Street. The roadway would initially be constructed as four-lanes with wide medians and signalized intersections in the section between K and Y Streets. Adequate space for an ultimate six-lane width would be acquired. At R Street, the roadway would curve east of the UNL Beadle Center west of, and adjacent to the stormwater channel before continuing northwest, passing between the Cushman plant and the Abel dormitory. This location would help maintain a united UNL City Campus while providing a vital new route to remove the excessive volumes of non-local traffic now cutting through the UNL City Campus along 16th and 17th Streets (see Figure 2.6).

Access along the North-South Roadway would be limited. The Amended Draft Single Package shows at-grade intersections at K, L, N, O, P, Q, Vine and Y Streets. Though P Street is proposed to be open at the channel, specific future development concepts may alter roadway configurations. Potential redevelopment at the northeast corner of 19th Street and O Street is expected to require consolidating several blocks (Q to O Streets, 19th to 21st Streets), ultimately with driveway access only provided on the east side of the new North-South Roadway. Restricting certain traffic movements at the intersection of P Street and the North-South Roadway may be warranted in the future if traffic congestion/stacking becomes too severe or if a large redevelopment project(s) is constructed east of this intersection.



Source: Antelope Valley Study Team

Figure 2.7: North-South Roadway and East-West Roadway Intersection

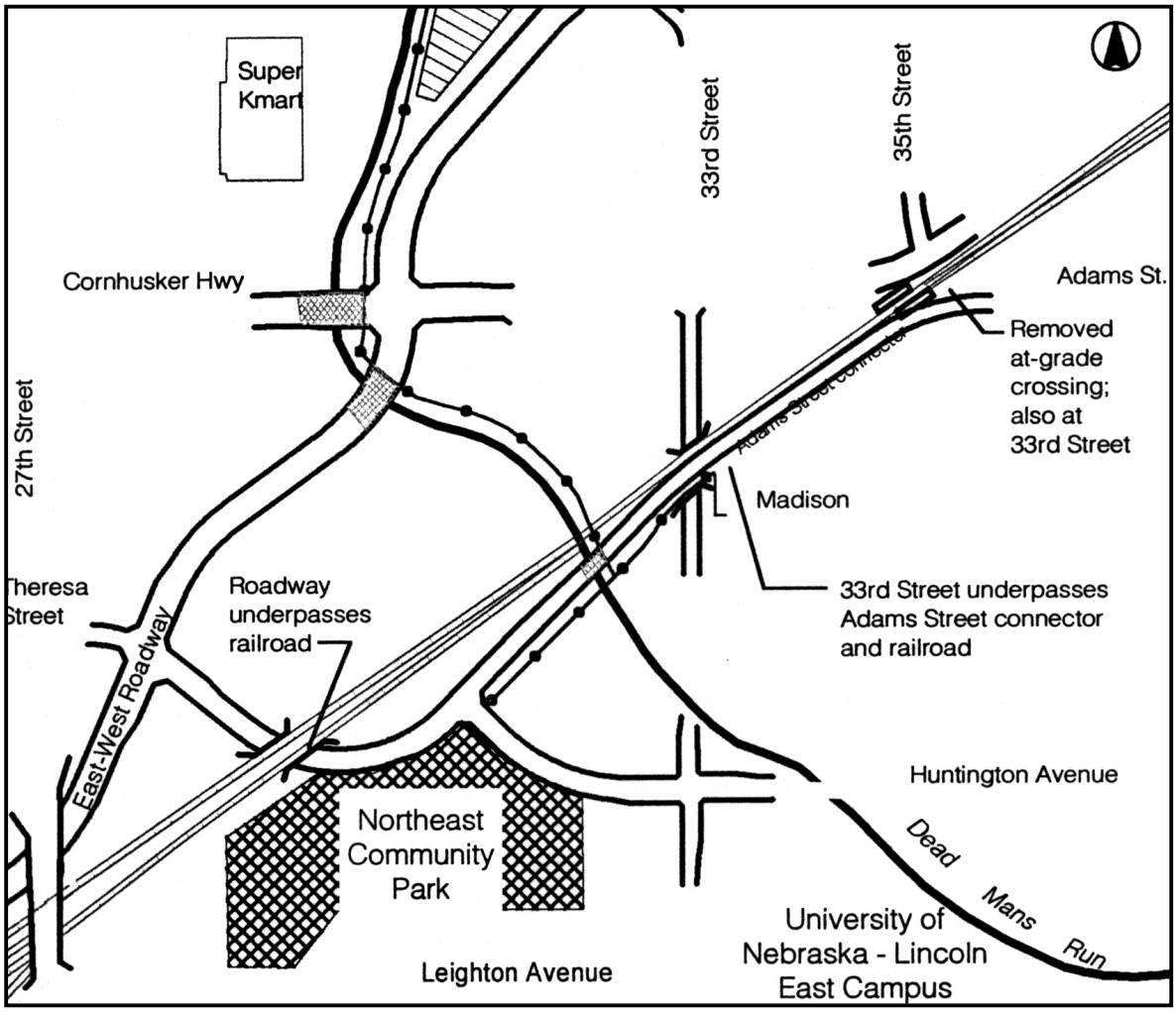
The Amended Draft Single Package discusses 16th and 17th Streets becoming two-way streets north of Q Street on the UNL City Campus. It is the City and UNL's intention to discuss the transfer of these and other internal campus streets to the University. In the Amended Draft Single Package, 16th Street would end to the north near the elevated portion of the North-South Roadway. 17th Street would end at relocated Y Street, which connects to the North-South Roadway. Access to the North-South Roadway from the UNL City Campus (as shown in both the Amended Draft Single Package and the University's Campus Plan) would be via Q Street, Vine Street, and a connector roadway located (relocated Y Street) between X and Y Streets (see Figure 2.7).

The 14th Street at-grade railroad crossing would be closed and 14th Street north of the railroad would become a local street, curving west to meet New Hampshire Street. Access to the North Bottoms neighborhood would be maintained at all current locations along 10th Street and access to the neighborhood from the North-South Roadway would be provided by a new 14th Street intersection at Military Road.

A new four (west of 14th Street) or six-lane East-West Roadway (east of 14th Street) would start on the west at Avery Avenue (near 9th and 10th Streets) and continue northeast to 33rd and Superior Streets. This roadway would meet the North-South Roadway at an intersection on structure over the BNSF Railroad mainline tracks at approximately 16th Street. The17th Street railroad grade crossing would be closed. The East-West Roadway would come back down to grade north of the railroad tracks and follow the State Fair Park Drive alignment northeast to 27th Street. Access to the State Fair Park would be provided at several locations east of the Devaney Center.

The East-West Roadway would pass under the 27th Street viaduct and continue northeast (see Figure 2.8).

The East-West Roadway meets Cornhusker Highway at an at-grade intersection immediately east of Dead Mans Run and continues northeast through generally undeveloped land, crossing Salt Creek on a new bridge and terminating at Superior Street. Here, the *Lincoln-Lancaster County Comprehensive Plan* shows the 33rd Street extension north of Superior Street.



Source: Antelope Valley Study Team

Figure 2.8: Cornhusker Highway and 33rd Street Area

The North-South Roadway along 19th Street and the East-West Roadway from Avery Avenue would complete the east and north edges of a "ring roadway" system around downtown Lincoln and the UNL City Campus. The 9th and 10th Streets and the K and L Streets pairs would make up the western and southern edges, respectively.

The Amended Draft Single Package would provide a third new roadway beginning at Theresa Street and proceeding southeast under the BNSF Railroad mainline tracks near 29th Street. A four-lane road, it would curve northeast to parallel the railroad tracks to Adams Street, where it would connect with the existing three-lane arterial roadway continuing to the east.

The Amended Draft Single Package would provide a connection from this roadway to Huntington Avenue at 33rd Street. A second underpass would be provided to connect 33rd Street under the BNSF Railroad mainline. Certain local business access roadways would also be modified. Two at-grade railroad crossings would be removed, at 33rd Street and near 35th and Adams Streets (see Figure 2.8).

2.2.3 Community Revitalization

Decisions regarding transportation and stormwater solutions helped guide, in many ways, the community revitalization options available. At the same time, the strength of many community revitalization elements helped determine which of several roadway configurations or stormwater solutions were deemed best and reasonable. In any case, community revitalization played a highly important role, reflecting Lincoln's sensitivity to its residents' desires and strong sense of community.

The Amended Draft Single Package contains all of the community revitalization concepts suitable for the study area that were physically feasible given transportation, stormwater and other opportunities. The broad-based vision encompasses:

- Neighborhood vitality, including encouraging a new downtown supermarket at the southeast corner of 19th and O Streets, mixed-use development, and closer-to-home strategies.
- Land-use patterns, including overlay districts to encourage development along a common neighborhood theme, stormwater conveyance-related linear parks and mixed-use development to buffer potentially conflicting land uses, and the successful marketing of well-located public properties for redevelopment.
- Downtown vitality, including encouraging new downtown housing in the form of townhouse and mixed-use development as well as a new employment center perhaps in the vicinity of K and L Streets and the new North-South Roadway.
- Trail continuity, including a new bike path loop linking existing and planned trails with a safe route around downtown.
- Recreation, including a new 13-hectare (33-acre) Northeast Community Park south of the railroad tracks between 28th and 33rd Streets, and expansion of Trago Park east of the new channel.
- Health and human services, including a new medical clinic and wrap-around centers.

2.3 Capital Costs of Amended Draft Single Package

The estimated implementation cost of the Amended Draft Single Package is $227 million. The estimated capital costs are summarized in Table 2.9, which also shows the comparative costs for the various components of the plan. With an estimated implementation cost of $114 million, transportation improvements would be the largest program, followed by community revitalization and stormwater management at $68 and $45 million, respectively.

Of the $227 million capital cost, $119 million would be consumed by construction. Engineering, design and programming fees would total $21 million and land acquisition for right-of-way would cost $34 million. Land assembly would also involve the acquisition of buildings and relocation of the families and businesses located in them. These costs are estimated at $14 million. A 20 percent contingency (25 percent for stormwater) (standards for this level of conceptual design) on all the previously mentioned costs has been included in the estimate, at a total of $39 million.

Table 2.9
AMENDED DRAFT SINGLE PACKAGE
CAPITAL COST ESTIMATE

	Capital Cost (millions of '97 $s)
TRANSPORTATION	
Construction *(includes utilities)*	55
Engineering/Administration *(19% of construction)*	10
Land Acquisition for right-of-way	22
Acquisition of Buildings & Relocation	8
Subtotal	*95*
Contingencies *(20% of subtotal)*	19
Total Capital Cost (millions)	***114***
STORMWATER	
Construction *(includes demolition, utilities & landscaping)*	21
Engineering/Architecture/Admin *(19% of construction)*	3
Land Acquisition for right-of-way	7
Acquisition of Structures & Relocation	5
Subtotal	*36*
Contingencies *(25% of subtotal)*	*9*
Total Capital Cost (millions)	***45***
COMMUNITY REVITALIZATION	
Construction	43
Design/Programming *(19% of construction)*	8
Land Acquisition for right-of-way	5
Acquisition of Structures & Relocation	1
Subtotal	*57*
Contingencies *(20% of subtotal)*	11
Total Capital Cost (millions)	***68***
TOTAL (millions)	**227**

Source: AV Study Team

2.3.1 Transportation

The estimated construction cost for the transportation components of the Amended Draft Single Package is $55 million. About half of the $55 million construction cost for transportation improvements ($25 million) would be required for the Central Hub. This bridge would carry the North-South and East-West Roadways over both Antelope Creek and the BNSF Railroad tracks, with an average vertical clearance of about 9 meters (30 feet) over the railroad tracks. The North-South and East-West Roadways intersect at an elevation of 10.0 meters (33 feet). The maximum elevations are10.4 meters (34 feet) for the North-South Roadway and 13.1 meters (43 feet) for the East-West Roadway.

Fourteen million dollars would also be required for the construction of the railroad underpass and roadways for the 33rd Street Hub. This portion of the plan would involve the extension of Adams Street and Huntington Avenue and the new 33rd Street underpass below the BNSF Railroad. Reconstructing three-lane Holdrege Street would cost one million dollars, while construction of the downtown roadways would cost $4 million. The reconstruction of State Fair Park Drive between the two hubs is estimated to cost $14 million.

Costs have also been added to the estimate for construction of transportation infrastructure to cover anticipated impacts at public facilities. This process is called functional replacement. This means publicly owned and publicly used buildings are replaced in kind as a project expense *before* the old facility is abandoned. Costs for three State Fair buildings, four UNL service buildings, and three softball fields with nearby tennis, volleyball, and horseshoe courts acquired for stormwater management and transportation improvements are budgeted at about $5 million, exclusive of land costs. Replacement is expected to occur on land already publicly owned. See section 4.5 for further discussion.

2.3.2 Stormwater Management

The stormwater management components of the Amended Draft Single Package are estimated to have a construction cost of approximately $21 million. This includes the construction of approximately 3260 meters (10,700 linear feet) of open channel, utility relocations, and construction of seven new bridges across the open channel at South Street, at N, O, P, Q, Vine, and Y Streets, as well as for the new west entrance to State Fair Park. Land acquisition is estimated at approximately $7 million, while the relocation costs for public and non-public structures would total approximately $5 million.

2.3.3 Community Revitalization

The construction of the various community revitalization improvements is estimated to cost approximately $43 million. The largest single cost among these improvements is the rehabilitation of Whittier Junior High School, which would cost $10 million, and also involve $1 million for acquisition and relocations. The public sector development costs associated with the various proposals for improvements in the eastern portion of Downtown Lincoln would total $13 million. These include $6 million for mixed-use development, including the Market Place extension, $2 million for the downtown supermarket, $2 million for downtown housing development and $4 million for the southeast downtown employment center. Developing the new Northeast Community Park is expected to cost $2 million. The construction of expanded trails is anticipated to cost $1 million, and another $2 million has been allotted for improvements to Trago Park, including acquisitions and relocations.

The improvements for the North 27th Street Community Center include $3 million for new buildings. The improvements associated with the Indian Center-Armory and Elliott Elementary School wrap-around sites are estimated to cost $2 million each, while $1 million has been earmarked for a community health care facility. Finally, allocations of $3 and $4 million have been made for improved land use transitions and closer-to-home strategies, respectively.

2.4 Project Phasing

It is likely that, if implemented, a project of this magnitude would be phased. In general, the improvements are expected to occur over 15 to 20 years. Stormwater management improvements, if deemed feasible, would be in a first phase. It is expected that some transportation improvements would be constructed concurrent with, and some after the stormwater improvements that would reduce the Antelope Creek floodplain. Community revitalization elements are expected to proceed as

quickly as their respective processes allow, unless the presence of the Antelope Creek floodplain defers some development concepts. Refer to Chapter 6 for additional discussion regarding project phasing.

During the spring and summer of 1998, dialog regarding the "hot buttons" and refinements to the Amended Draft Single Package resulted in some assumptions regarding phasing if the Amended Draft Single Package is selected. Specifically, the new roadway downtown would be constructed initially as four through-lanes to meet traffic and community needs, with plans for an ultimate six-lane configuration. The potential environmental impacts disclosed in this document reflect the potential impacts of the six-lane condition. Specific downtown intersection configurations may also be phased, depending on the adjacent development plans.

2.5 No-Action Alternative

For analysis purposes, a "No-Action" Alternative is what would be expected in the study area if none of the study area improvements is implemented. The No-Action Alternative, shown in Figure 2.9, serves as a base to illustrate the potential benefits, costs and impacts of "Build" Alternatives. The No-Action Alternative includes programmed (i.e., funded) improvements for implementation in the next six years (City of Lincoln, Capital Improvement Program, 1997-2003).

2.5.1 Stormwater Management

The existing channel and conduit would continue to provide conveyance for less than the five-year storm. Storms of greater magnitude would continue to cause flooding in the Antelope Creek basin. The area of potential flood damage would not be reduced or eliminated. Future flood losses and the possibility of injuries and loss of life would not be reduced.

2.5.2 Transportation

Through traffic would continue to use North Bottoms, Clinton and Malone neighborhoods and UNL streets. Safety concerns at railroad grade crossings at 14th, 17th, Adams, and 33rd Streets would not be addressed and interference in and by railroad operations would continue.

Specific capital improvements identified in the City of Lincoln's Capital Improvement Program (City of Lincoln, Nebraska, July 1998) include two bridge replacements in the broad analysis area and one roadway widening. The bridge replacements include Cornhusker Highway at Salt Creek and Charleston Street at Salt Creek. The Capital Improvement Program includes improvements to Cornhusker Highway from 18th to 33rd Streets. The roadway is programmed to be widened to four lanes with multiple turn lanes and new signals and lighting.

2.5.3 Community Revitalization

In the area of community revitalization, the City of Lincoln's Urban Development Department is advancing several projects in the broad analysis area. Specific items identified in the Capital Improvement Program for 1997-2003 are listed below.

Improvements for each item listed include site preparation, landscaping, utility relocation, and other construction. The areas are illustrated on Figure 2.9.

- O, P, Q, R Streets/North Haymarket Redevelopment (Block 35 and Journal-Star Haymarket Square)
- 12th Street Revitalization Area
- Haymarket Area Pedestrian Improvements (along O Street from 7th to 9th Streets)
- Block 55 Redevelopment Project (aesthetic improvements along O Street from 10th to 11th Streets)
- North 27th Street Redevelopment (economic revitalization along 27th Street from N Street to the overpass at Leighton Street)
- Focus Area Revitalization Activities (typically includes sidewalk construction, alley construction, park development and tree planting)
- Market Place Improvements (street and pedestrian improvements along six blocks of P Street from Haymarket at 9th Street to Centennial Mall)
- O Street Redevelopment (aesthetic improvements from 9th to 10th Streets and 13th to 16th Streets).

Other programmed projects in the Capital Improvement Program include items for the Northeast Radial Reuse Area Redevelopment Project and Antelope Valley Improvements. For analysis purposes these are not included in the No-Action Alternative because they overlap Antelope Valley proposals.

Concurrent with the latest Partner analyses of the Amended Draft Single Package, the Board of Regents of the University of Nebraska initiated its own system-wide campus Master Plans updating process. For the City Campus in Lincoln, the UNL student, faculty, and administration discussions led to a plan that utilizes elements in the Antelope Valley plan to define some elements of the future campus. The Amended Draft Single Package and the UNL plans fit together as hand and glove. For example, in the UNL plan, the North-South and East-West Roadways are shown for reference forming the new north and east boundaries of the City Campus. The results of the narrowing of the floodplain to the width of the new channel also are evident in the number and placement of proposed buildings in the former floodplain. The UNL plan also helps give further confidence to some that the university fully intends to transfer land owned outside of the new boundaries for new Antelope Valley development.

Under the No-Action Alternative, the programs designed to improve the quality of life would not benefit from the opportunities presented through the AV stormwater management and transportation aspects of the project.

Figure 2.9

Figure 2.10

Figure 2.11